tremity of thoſe branches ſo diſtant, that Melons will grow; but they cannot be good, becauſe they are ſo far from the place, which affords them their nouriſhment; and their Juyce is alter'd by the length of its paſſage through the branches, which the Sun ſpoileth; whereas the foot of the Melon being ſhort and well truſs'd, there are always leaves covering the branches and even the Melons themſelves, until they be near ripe.

Too great heat parches them too much to take nouriſhment well; and this you muſt take care of. He that is curious, muſt every day walk often in his Melon-garden, to cut off all the branches, which he ſhall obſerve to be uſeleſs, or hurtful. You'l find of them to ſhoot forth almoſt to the Eye, and they are capable to alter all, if it be not remedied in time.

I muſt not forget to tell you, that from the midſt betwixt the two Ears and the two firſt Leaves there ſhoots out yet one branch more, which ought to be kept, if vigorous, but cut, if weak.

In the *Figure* I have mark'd a Leaf with 5, ſhooting out from the midſt of the fourth knot: I might have mark'd more, coming forth ſucceſſively from one another, as you ſee the fourth come from the third, &c.

*We may perhaps the next* Moneth *impart to the Reader another Letter from the ſame Generous and Intelligent perſon, upon the ſame Subject.*

## An Account of two Books.

### I. *Renati Franc. Sluſii* MESOLABUM.

SEU

*Duæ mediæ Proportionales inter extremas datas per Circulum & per Infinitas Hyperbolas vel Ellipſes, & per quamlibet exhibitæ.*
*Ac Problematum omnium Solidorum effectio per eaſdem Curvas.*
*Acceſſit pars altera de Analyſi, & Miſcellanea.* Leodii Eburonum 1668. in thin 4°.

THe *Argument* the Title declares to be the ſame with that in the Geometry of the famous *Des-Cartes*; *viz*. That Ancient Probleme of finding *two Means*, or *Doubling the Cube*, which troubled all *Greece*. The Solution of which Probleme in Geometry may be compared to that with the giving of the *Cube-root* of any Number propoſed in *Arithmetick* :, For, in Arithmetick, the firſt of two continual Proportionals between an *Unit* and *any Number* propoſed, is the *Cube-root* of that Number, and the Unit in Arithmetick is repreſented by a Line in Geometry, which is one of the Extreams.

Concerning this Probleme, the *Author* declares himſelf to be none of thoſe, that ſearch for that which cannot be found, to wit, to perform it by *Right Lines* and a *Circle*. 'Tis true indeed, it may be ſo done, to wit, by tryals and profers; as, who cannot in that manner divide an Arch into three Equal parts? But ſuch *Mechaniſmes* are accounted *ageometrick*; and ſuch operations may be well reſembled to the vulgar Rule of *Falſe Poſition* in Arithmetick, which cannot give an abſolute true Reſolution of one of the meaneſt of Queſtions, when the thing ſought is *Multiplex* of it ſelf, or Involved; for inſtance, what Number is that, which multiplyed in it ſelf makes 9; who knoweth it not to be 3? But who can find it to be abſolutely ſo by the aid of the ordinary rules of *Falſe Poſition*, wherein the Extraction of a *Square Root* is not preſcribed?

The Author obſerves, that amongſt thoſe, that ſolve this Probleme by the *Conick Sections*, they ſeem to have afforded fewer Effections thereof, than there have been Ages, ſince it was firſt propoſed. Very few by ayd of a *Circle* and an *Hyperbola* or *Parabola*: by a *Circle* and *Ellipſis* none, that he could obſerve to have been publiſhed.

The which the Author conſidering, and ſtudying how to ſupply, he found out not onely one, but infinite ſuch Effections, and that not in one Method, but many; following the guidance of which Methods, by the like felicity he hath conſtructed all ſolid Problems infinite ways, by a *Circle* and an *Ellipſis* or *Hyperbola*.

1. His general Methods for finding two Means, by a *Circle* and either an *Hyperbola* or *Ellipſis*, are laid down in Prop. 1, 2, 16, and in this 16 Prop. he ſheweth to do it with *any Ellipſis* and *a Circle*.

2. Particular Effections for finding but one or both of the Means,

Means, and Doubling the Cube, in Prop. 3. to 6.

3. And albeit all *Cubick Æquations* may be ſolved, either by the finding of *two Means*, or the *Triſection of an Angle*, yet he ſhews the Extent of his Method, in finding out other Infinite ways for the doing thereof, from Prop.7.to 12.

4. The *Triſection* of an *Angle* by a *Circle* and *Hyperbola*, Prop. 13. and by a *Parabola* in ſtead thereof, Prop.15. And the finding of *two Means* by a *Circle* and *Parabola*, Prop. 14.

In the Second part of his Book *De Analyſi*, the Author firſt gives you the *Analyſis* or *Algebra*, whereby all his *General* Methods of finding *two Means* were invented. And afterwards, for the advancement of Geometry, gives you the *Analyſis*, that relates to his *particular* Methods, as in caſe you would find but one of thoſe Means, and afterwards by an eaſie operation the other. After that, he comes to ſhew, how the Effections or Delineations for *Cubick Æquations* were invented; And then, how thoſe Conſtructions for the *Triſection* of an *Angle* were found out: the uſe whereof is, to give Lines in a known meaſure, equal to the quantity's ſought, whereby either to give aid in the eaſie obtaining the firſt and ſecond figures of the root, or controul the ſame.

*Laſtly*, he comes to treat of *General* Conſtructions for the reſolving of all *ſolid* Problems, without reduction of the Æquations propoſed; and ſheweth a *general* Conſtruction for all *Cubick* and *Bi-quadratick* Æquations by ayd of a *Circle* and a *Parabola*, letting *Ordinates* fall from the points of Interſection on ſome Diameter of the *Parabola* (which is always parallel to the *Axis*,) whereas *Des Chartes* letting thoſe *Ordinates* always fall upon the *Axis*, was forced to prepare and alter the Æquations by driving out or taking away the ſecond term (which is next the higheſt,) that the ſum of the *Negative* roots might be equal to the ſum of the *Affirmative* ones, as his Conſtructions always require.

But how to find out all the variety's of ſolving all *Solid* Problems by the *Conick Sections*, hear the *Author* to the *Reader*: *Methodum non adſcripſi, tum quod gratius ac utilius futurum arbitratus ſum, ſi eam ipſe privato Studio, ex hiſce Speciminibus eliceres, tum etiam quod judicium tuum de tota re præſtolarer, Decrevi enim,*

*ſi*

*ſi favor tuus accedat, non ipſam methodum tantum, ſed & alia, quæ ſimul obſervavi, brevi, Deo bene juvante, cenſuræ tuæ ſubmittere.*

We come next to ſpeak of the laſt part of the Book, to wit, his *Miſcellanea*, and becauſe it falls in here ſomewhat properly, we therefore firſt mention his fourth Chap. *De Maximis & Minimis*, from which he derives this Propoſition;

*If any Magnitude (or Number, as the whole) be divided into ſuch parts, that are to each other as a Number to a Number, the Product of thoſe powers of the parts, that are of the ſame degree, as the parts themſelves denominate, is the greateſt of all Products of the like powers of the parts of the ſame magnitude when otherwiſe divided.*

Concerning the Propoſition the *Author* ſaith thus; *Liceret hujus Propoſitionis Uſum prolixius extendere ad determinandas nempe maximas & minimas applicatarum in Curvis, tangentes, & ſimilia; verum cum hanc materiam nuper in Exercitatione ſua Geometrica feliciter aggreſſus ſit Vir Clariſsimus* Michael Angelus Riccius, *doctrina & humanitate ſingulari, orbi literato notiſſimus, & juſti operis ſpem faciat; fruſtra nunc pluribus inſiſterem, cum meliora & perfectiora ab ipſo propediem expectari debeant.*

That exercitation of *Riccio* hath been lately re-printed for *Moſes Pitts*, Book-ſeller in *Little-Britain*, (and is annexed to *Mercator*'s *Logarithmotechnia*) wherein the *Author Riccio* promiſeth a new Rank of *Conical Solids*, which cut, do exhibit thoſe *Infinite Parabola*'s *and Ellipſes*, whereby all Æquations may be eaſily reſolved and determined. But the Learned and Modeſt *Sluſius* in a *private* Letter concerning theſe matters, and *Riccio*'s before-mention'd *Geometrical Exercitation*, ſaith ſomewhat more. *Diu eſt etiam ex quo eandem materiam aggreſſus fueram, qua Methodo, videbis in* Miſcellaneorum meorum *Cap.* 4. *ubi Propoſitionem univerſalem demonſtarvi, ex qua omnia deduci poſſunt; non tamen deduxi, ne viro amico, qui hanc materiam jam occuparat, & a quo multa ac præclara expectari poſſunt, occaſionem bene merendi de Rep. literariæ præriperem.*

Concerning the reſt of the *Miſcellanies*; Our Author in the 1. *Chapt.* treates *De Infinitis Spiralibus, & ſpatiorum, ab iis & Radio*

*Radio Circuli comprehenſorum, menſura.* Concerning which he tells you, that *Archimedes* ſquared that *Spiral*, which was made by an equal motion both in the *Radius* and *Circumference* of the Circle: that *Stephano Angeli* hath done the like, when the Motion in the *Radius* is equal, but in the *Circumference* according to any degree of Acceleration; which gave him occaſion to render this Doctrine eaſie and Univerſal by reducing it to one *Analyſis*, when the motion is accelerate according to any degree either in the Radius or Circumference; and hence reſolves this Probleme; *In Circulo deſcribere Spiralem ex talibus motibus compoſitum, ut Circulus ad ſpatium Spirale habeat rationem datam numeri ad numerum.* And applies the ſame Doctrine in

*Chap.*3. to another ſort of *Infinite Spirals.*

*Chap.* 2 He treats *De menſura ſpatiorum, curva & recta Contentorum, & eorum Centri Æquilibrii*; applying the former *Analyſis* or *Algebraick* Calculation thereto.

*Chap.* 5. Treats *De Puncto flexus contrarii in Conchoide Nicomedis prima:* which Point he determins by the Interſection of a *Parabola*, whoſe *Axis* is ſituated in the ſame Line with that of the *Conchoid*; or by a *Cubick Parabola*, whoſe *Axis* is parallel to the *Baſe* of the *Conchoid*, and *Vertex* the ſame with the *Pole* of the *Conchoid*; and hence invents innumerable other *Conchoids* of like properties, and finds the Curve, paſsing through thoſe points of flexure, that are made by *Infinite Conchoids*, deſcribed about the ſame common *Pole* and *Baſe*, which in the *Common Conchoids* he finds to be the *Perimeter* of the *Cubick Parabola* here mentioned: But in his own *new Conchoids*, it is the antient *Ciſſoid*, extended beyond a Quadrant and running *Aſymptotick:* And he finds alſo the round Solids made by the Rotation of theſe infinite Curves, and of the *Ciſſoid* Line, about their *Baſe* Lines or *Aſymptotes* equal to finite Solids.

*Chap.* 6. The Author conſidering; that *Vincenzo Viviani* in his Book *De Maximis & Minimis* found, that if there were innumerable *Parabola*'s deſcribed, having the ſame *Axis* and *Vertex* common, if from any point in that *Axis*, the ſhorteſt Lines were drawn to thoſe *Parabola's*, all thoſe points of Incidence would fall in an *Ellipſis*; and the Authors Analyſis taught him, that the *Prop.* was Univerſal, whereſoever the point be aſſigned, from

which

which the leaſt lines are to be drawn; which he hath extended, and applyed to thoſe infinite ſorts of other *Parabola*'s.

*Chap.* 7. Treats *De Figurarum dimenſione ex dato Centro Æquilibrii:* This he ſaith is accurately handled by the Learned already; *Aliquot tamen modos adſcribit, ut non difficiles, ita nec inutiles ad inveſtiganda Æquilibrii Centra:* which may be applyed to good uſe; for, in any Curve, if there be *Ordinates* enough given, ſtanding erect at an equal parallel diſtance, you may approach the *Area*, and if by ayd thereof, you find the Center of Gravity, then do you obtain the meaſure either of the *Round Solid*, or *Spindle* made by the Rotation of the given Figure, or of *Hooſes* raiſed upon it as a Baſe.

*Chap.* 8. The Author ſheweth an eaſie way of finding the Center of Gravity of an *Hyperbolical Conoid*, and that in order to the reſolution of this Probleme; *Locum invenire, ad quem ſunt omnia Centra Conoidum Hyperbolicarum, quæ fiunt ab Hyperbolis in dato Cono recto ſectis, & quarum Axes ſint Axi ejuſdem Coni paralleli*; which he finds to be an *Hyperbole.*

*Chap.* 9. He treats of the *Center* of *Gravity* of the *Lunula* of *Hippocrates Chius*, and ſheweth, that if *Hippocrates* had given that, as he did the *Quadrature* of the *Lunula*, he had ſquared the *Circle.*

*Chap.* 10. Treats of Arithmetical Problems, wherein he aſſerts, that *Diophantus* was wont to ſolve *Arithmetical* Queſtions with great ſubtilty, but uſeth numbers only, whereas the ſame may often be more eaſily and univerſally ſolv'd by *Algebra*; and takes for examples, the third Queſtion of the Fourth Book, which he reformes, and reduceth divers of the like kind, that *Bachet* hath added, to one Propoſition and Reſolution; the 44th of the Fourth Book of the ſame *Diophantus*, which being ſolved with much trouble, he ſheweth to have a briefe *Analyſis*; the 13th of the third Book, and the 36th of the fourth Book, by reaſon of the likeneſs of it's Operation with the former.

Thus we have given an account of the Authors Book. What Repute he hath among the Learned, needs not to be inſiſted on. The famous *Paſchal* or *Dettonvile* in a Letter to this *Author*, ſaith, (to give it in *Engliſh*;) I believe, that to make it known that 'tis *You*, who hath found (for Example) this *Parabola*, which is

the

the Place, that gives the Dimenſions of the Surfaces of the Solids of the Cycloid about the *Baſe*, it muſt be I, that muſt tell the World ſo; as well as the other Wonders of your *New Analyſis*, and ſo many other things, which you have done me the honor to impart unto me, with that goodneſs you are pleas'd to have for me, *&c.*

The Book here commended is the Second Edition of the *Meſolabe* of this Excellent Geometer, our Author; Concerning whoſe *firſt* Edition thus ſaith *Stephano Angeli* pag. 217. *Acceſſionis ad Stereometriam & Mechanicen.* Quomodo autem *hujuſmodi Problemata Solida conſtruantur, edoctum fuit a quam plurimis; ſed Herculeas metas in infinitum tranſcendit Nobiliſſimus & Clariſſimus Geometra* Renatus Franciſcus Sluſius *Leodienſis, in ſuo admirabili Meſolabo, in quo hæc infinitis enucleat modis.*

Concerning *this* Book, we find it to be the judgement here, (and doubtleſs it will have the ſame eſteem elſewhere among the Learned) that in it there is the moſt excellent Advancement made in this kind of *Geometry*, ſince the famous Mathematician and Philoſopher *Des Cartes*.

## II. *Tractatus de CORDE; item de motu & Colore SANGUINIS*, &c.

*A.* Richardo Lower, *M. D. Londini in* 8o, *impenſis* Jacobi Alleſtry, 1669.

THe Learned Author of this Treatiſe ( a Member of the *R. Society* ) conſidering with himſelf, how important it was, for the attaining a full knowledge of the Nature and Qualities of the *Blood*, to inveſtigate, beſides the *Circular Motion* thereof, the *Origin* and *Celerity* of that Motion, and the various *Changes* thereof, together with the *Cauſes* of them; as alſo, to make an eſtimate of the Quantity of that Liquor emitted at every Pulſation; thought it very well worth while, to give, from his own beſt Obſervations, a clear and particular account of that whole matter. And for as much as he conceives, that the *Motion* of the *Blood* depends on that of the *Heart*, he begins with a Diſcourſe concerning the *Situation* and *Structure* of the *Heart*, to ſhew, How exactly theſe two are calculated for its Motion, and how well adapted to diſtribute the Bloud into the parts of the whole Body.

In the *Firſt Chapter* then, he conſiders the *Diverſity* of the *Situation* of the Heart in *different* Animals, and the Reaſon thereof; proceeding to diſcourſe of the *Pericardium* and its Uſe, together with the Origin and Vſe of the *Serum* therein; and why in *Man* onely that *Caſe* of the *Heart* grows to the Midriff, and what makes it to do ſo; as alſo, why the *Cone* in an *Humane* Heart bends much more to the Left ſide, than in *Brutes:* Then ſhewing, that *Arteries* have their riſe *from* the Heart, but *Veins* terminate *in* it, and how and by what Veſſels the Heart is nouriſht by the Alimentary Juyce: treating alſo of the *Veſſels* of the Heart, its Nerves, and the various Influx of the Animal Spirits through the Nerves into the Heart, according to the various ſhapes of Animals, together with the Cauſe thereof: Proving further, that the ſubſtance of the *Heart* is perfectly *Muſcular,* and in perfection ſurpaſſing all other Muſcles of the Body (where he exſpatiates into un-common Obſervations concerning *Muſcles* in *general*;) then deſcending to a Minute Explication of the parts of the Heart, and there particularly ſhewing the *Mechanical* Contrivance of the Heart for its *Syſtole* and *Diaſtole,* together with an accurate deſcription of the *Foramen Ovale,* and its Vſe in the *Fœtus,* and the Clauſure of the ſame in Animals born.

In the *Second Chapter* he treats of the *Motion* and *Office* of the Heart; Where, as he admits not of any *Ferment* or Ebullition of the Bloud in the Heart (which he affirms would be an Obſtacle to its *Syſtole,* as 'tis needleſs to the *Diaſtole,*) ſo he aſſents, that the Motion of the Heart depends not from ſuch an Ebullition (which he proves by Experiments, and vindicates from Objections;) but that the genuine and immediate Inſtruments of the Heart's Motion are its Fibres, Nerves, and Spirits flowing through them, the action of the Heart being altogether conform to that of other Muſcles: Where he takes occaſion to make it out, that the Motion of Muſcles is not caus'd by their being *inflated,* nor by any *Exploſion* of the Spirits paſſing through them, but after the manner, as two men taking one another by their hands draw themſelves

ſelves cloſe together into mutual embraces: Whence he goes on to ſhew That the whole Motion of the Heart conſiſts indeed in the *Syſtole*, that of the *Diaſtole* being onely a *Motion* of *Reſtitution*. Further, that there is a neceſſary Commerce betwixt the *Heart* and *Brain* (the Cauſe of all Senſe and Motion:) but that both ultimately depend from the *Stomack*, as the conſtant *Purveyor* and Furniſher of Matter for Bloud and Spirits.

In the *Third Chapt.* he teacheth, with what *Celerity* all the Bloud paſſeth through the Heart, and what *difference* there is between the *Venal* Bloud and the *Arterial*. As to the *former*, he calculateth, that all the Blood paſſeth through the Body, thirteen times, (not *Six*, as 'tis miſprinted in the Book it ſelf) in *one* hour. And concerning the *latter*, he is of opinion, that the *Purpureous* and florid color of the Blood in the Arteries proceeds not from its *Accenſion* in the Heart (if there be any ſuch thing) but depends altogether from the *Lungs*, and the *Admixture* of the *Air* with the *Bloud* there: which he proveth by conſiderable Experiments; refuting withal the opinion of thoſe that will derive it from the *Comminution* of the Bloud in the Lungs.

In the *Fourth Chapt.* he gives an Accompt of the Riſe, Progreſs and Uſe of the Invention of *Transfuſing* Bloud out of one Animal into another: though in the Hiſtory of this particular he commits (I know not by what over-ſight) a miſtake, in relating, that *Monſieur Denys* (call'd by him *Dionyſius*) arrogateth to *himſelf* that Invention, whereas he onely tells us that ſome of his Nation do ſo. Beſides which, we muſt needs take notice of another miſtake in this part of the Book, *viz.* that the Author taking occaſion to ſpeak of the *Philoſ. Tranſactions*, calls them the Tranſactions of the *Society*; which certainly he would not have done, if he had either but taken notice of what is ſaid in *Numb* 11. of the ſame; or elſe conſider'd, that ſo Illuſtrious and ſo Learn'd a Body would certainly, if they thought fit to publiſh any thing as theirs, entertain the knowing World both with ſublimer Matter, and with a ſutable Eloquence: But this *by the by*.

In the *Fifth Chapt.* he treats of the *Chyle*, and its Change into Bloud; where he obſerveth, that nothing paſſes from the *Spleen* through the *Vas breve* into the *ſtomack*; but that the *Ferment* of the ſtomack proceeds immediately from the Blood it ſelf: Explaining further, How the *Separation* of the *Chyle* is perform'd in the *Inteſtins*, and how the ſame, to facilitate the more its paſſage, is diluted and refined by the Iuyce of the *Pancreas*, ſecreted into the *Duodenum*: Rendring alſo the Cauſe, Why all the *Glanduls* in the *Abdomen* and in all the lower parts of the Body do depoſite their *Lympha* or Juyce into the Common great *Receptacle* of the *Chyle*, and Why that Receptacle is plac'd between the *Tendons* of the *Daphragime*; as alſo, Why thoſe Channels, which convey the Chyle into the *Subclavial* Vein, are double. To which he adds, That all the Chyle is by the *Ductus Thoracicus* alone tranſmitted into the Bloud and Heart, which he proveth by ſeveral conſiderable Experiments, with ſome reflexion on the *Bilſian* Experiment alledged for the contrary. All which he concludes by ſhewing the degrees and ways of Change, whereby the Chyle is at laſt converted into Bloud; and how it ſerveth for the *Nouriſhment* and the ſeveral parts of the Body.

The Whole receives a ſingular Elucidation and Ornament by the Accurate *Figures*, in *6. Tables* annexed.

Many Curious and important Obſervations are occaſionally interſperſed; ſuch as are: That the Capillary veſſels (of the ſame ſort) do open into one another in all the parts of the Body: That all the Muſcles of the Body, are *Biventers* or double-belly'd: That as the Motion of the Heart and Bloud is Circular, ſo the Fibres, as the Moving *Engines* of them, are about the *Cone* of the Heart brought into a Circle and Center: That the Motion in the Muſcles is not like *Shooting*, but *Fencing*; and many more, for which we muſt referr to the Book it ſelf.

*FINIS.*

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LONDON,
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